50 years 1958-2008



NEED
programmable relays

2009

www.relpol.com.pl

relpol S.A.

NEED programmable relay



Exceptional simplicity
of programming

Service and technical counseling provided by **Relpol S.A.**

why is NEED outstanding:

- **LCD display of high contrast (4 lines 12 characters each) and keyboard,**
- program parameters to be set with the keyboard, and preview of variables on the display,
- four user-programmable buttons of the keyboard,
- possibility to measure voltages 0...255 V AC; 0...12,75 / 0...25,5 V DC; 0...255 V DC and currents 0...25,5 mA / 0...51 mA (depending on the version),
- LED signaling the status of the relay and inputs / outputs,
- internal potentiometer, possibility of connecting external potentiometer in DC versions,
- fast bidirectional counter / frequency meter - measurement up to 20 kHz,
- possibility of configuration of DC analog-digital inputs as voltage or current ones,
- possibility of configuration of counters and timers from DC analog-digital inputs,
- possibility of monitoring of three-phase voltage for 230AC-22-16-8R-D version (equipment control of asymmetry and phase sequence),
- real time clocks with automatic time change summer / winter,
- co-operation with the external memory,
- possibility of programming in graphic language LAD or text language STL,
- free PCNeed software; competitive price.

ORDERING CODES

Programmable relays	Supply voltage	Characteristic			
		Version	Inputs	Outputs	Features
NEED-230AC-22-08-4R-D	230 V AC	22	8 inputs	4 relay outputs	keyboard, LCD display
NEED-24DC-22-08-4R-D	24 V DC	22	8 inputs	4 relay outputs	keyboard, LCD display
NEED-12DC-22-08-4R-D	12 V DC	22	8 inputs	4 relay outputs	keyboard, LCD display
NEED-220DC-22-08-4R-D	220 V DC	22	8 inputs	4 relay outputs	keyboard, LCD display
NEED-230AC-22-16-8R-D	230 V AC	22	16 inputs	8 relay outputs	keyboard, LCD display
NEED-24DC-22-16-8R-D	24 V DC	22	16 inputs	8 relay outputs	keyboard, LCD display
NEED-12DC-22-16-8R-D	12 V DC	22	16 inputs	8 relay outputs	keyboard, LCD display
NEED-220DC-22-16-8R-D	220 V DC	22	16 inputs	8 relay outputs	keyboard, LCD display

The data in bold type pertain to the standard versions of the relays.

structure of NEED system

- **NEED-...-D** - programmable relay (see page 2 - table „Ordering codes”),
- cable for programming and diagnostics, for connection to PC computer:
  * RS232 - **NEED-PC-15B**,
  * USB - **NEED-PC-15C**,
- **NEED-M-4KB** - external memory card (4 kB) ❶,
- **PC NEED** - software for editing, compiling, programming of the relay and the external memory card; programming in LAD or STL,
- user's manual - **www.need.com.pl**

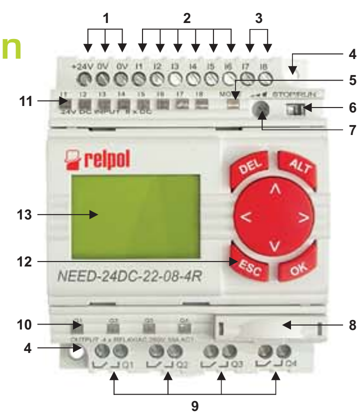


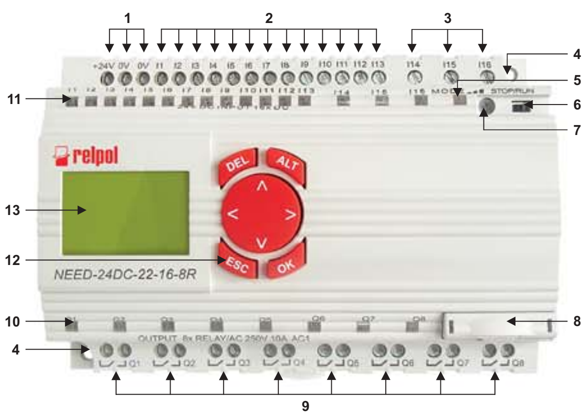
Resources available in the relay

Physical resources	NEED-...-08-4R-D	NEED-...-16-8R-D
Display and keyboard	Yes	Yes
Programmable function buttons	4 (B1 - B4)	4 (B1 - B4)
Inputs	6 digital inputs (I1 - I6) ❷, 2 analog-digital inputs (I7 - I8)	13 digital inputs (I1 - I13) ❷, analog-digital inputs (I14 - I16)
Outputs	4 relay outputs (Q1 - Q4)	8 relay outputs (Q1 - Q8)
LED indicator of the relay status	Yes	Yes
Three-phase network control system (voltage, asymmetry and phase sequence) ❸	No	Yes
STOP/RUN mode switch	Yes	Yes
Potentiometer for analog settings	Yes	Yes
LED indicators of input / output status	Yes	Yes
Program resources	**NEED-...-08-4R-D**	**NEED-...-16-8R-D**
Markers	64 (M1 - M64)	64 (M1 - M64)
Marker of phase sequence ❸	No	Yes
Timers ❹	32 (T1 - T32)	32 (T1 - T32)
Bidirectional counters	8 (C1 - C8) values 0-65535	8 (C1 - C8) values 0-65535
Fast bidirectional counter / meter of frequency up to 20 kHz	Yes	Yes
Comparators of analog values	16 (A1 - A16)	16 (A1 - A16)
Real time clocks	8 (H1 - H8)	8 (H1 - H8) ❺
Text markers	8 (MT1 - MT8)	8 (MT1 - MT8)

front panel description

1 Supply terminals
2 Digital input terminals
3 Analog-digital input terminals
4 Openings of 5,5 mm diameter for panel mounting with two M4 screws
5 LED indicator (three-coloured) of the relay status
6 STOP/RUN switch of operation mode
7 Potentiometer for analog values setting
8 Programming connection of relay and external memory card, secured by stopper
9 Output terminals
10 LED indicators (yellow) of output status
11 LED indicators (green) of input status
12 Keyboard
13 LCD display





❶ The external memory card is not required and is an optional extension of the relay program memory.
❷ Inputs I4 (NEED-...-08-4R-D) and I11 (NEED-...-16-8R-D) may function as a fast counter or meter of frequency.
❸ Only for 230 V AC version.
❹ Time range 10 ms...99 h 59 min., resolution 10 ms, precision ±1% of the set value +0...1 ms.
❺ With automatic time change (summer / winter) for various time zones - EU, GB, US, RU.

PC NEED - exceptional simplicity of programming

software PC NEED

A computer program which allows editing, compiling and downloading of a program to the memory of a programmable relay. The resources of the relay may be monitored in course of operation, owing to which the user may be currently informed about the status of the inputs, outputs, timers, counters, clocks, comparators, etc.

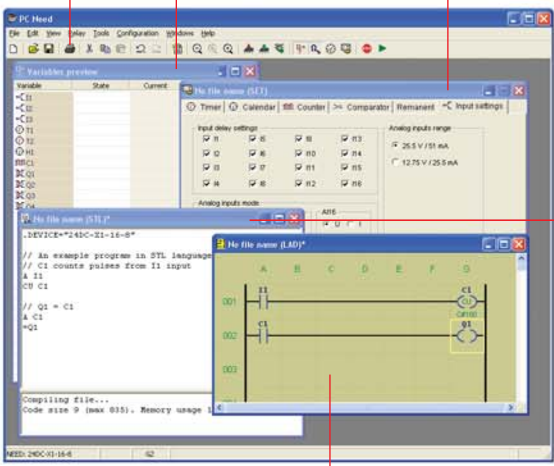
The simplicity and variety of the program edition (text or graphics) make the PC NEED a very convenient tool, owing to which even complex applications are made very quickly, and their start-up time is short.

Hardware requirements: any computer of PC class with RS232 or USB interface and VGA graphic card, operating system - Windows 98®, Windows 2000®, Windows XP®, Windows Vista®.

Program printout:
- LAD or STL,
- configuration parameters.

Preview of variables:
- possibility to monitor the relay's resources.

Resources settings:
- possibility to set the parameters of timers, counters, clocks, comparators, etc.,
- simple operation and understandable menu,
- editable alert texts and definitions of keyboard buttons.



STL language:
- possibility of conversion from LAD to text language,
- possibility of programming in text editor and further copying of the application,
- the language syntax highlighted,
- setting customized colors and fonts.

LAD language:
- simplicity of programming which allows quick application designing,
- symbolic labels of individual elements,
- easy creation of applications based upon an electrical chart,
- possibility of inserting comments, color and font configurations,
- ladder preview to facilitate the start of the software.

never before – NEED

The **NEED programmable relay** is a product based on the Polish know-how which is perfectly implemented in applications of industrial automatics. The relay is an interesting alternative for similar solutions offered by other manufacturers due to its **numerous outstanding advantages**.

1) Preview of variables as a tool for monitoring all the resources in the relay.

2) A wide range of analog-digital inputs and possibility of configuration of DC inputs as voltage or current ones.

3) The mode of monitoring three-phase voltage for the 230AC-22-16-8R-D version

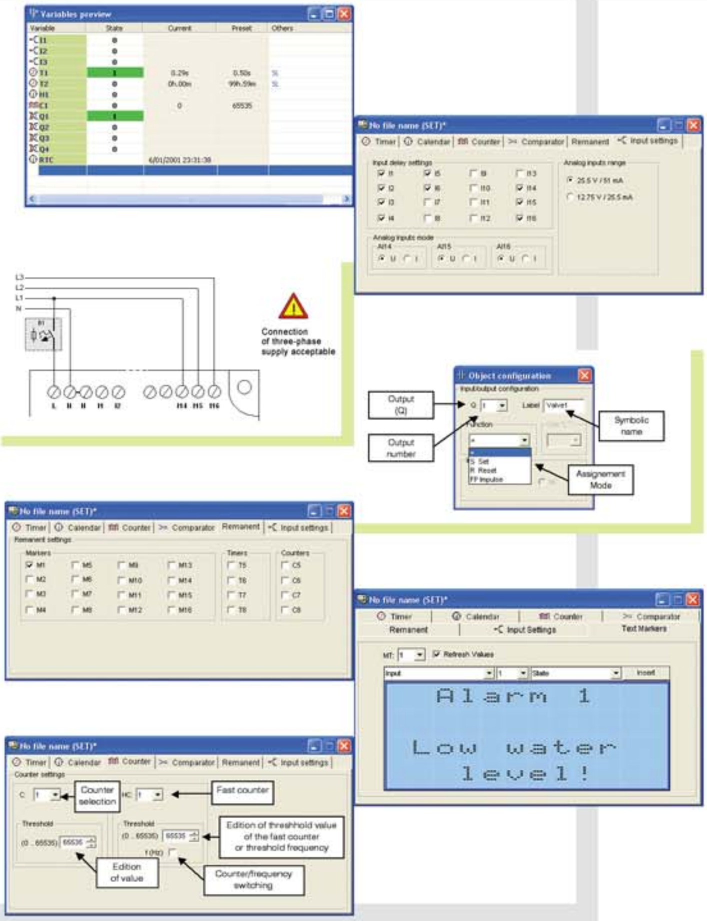
4) **Possibility to read the program structure existing in the relay, including the symbolic names assigned to individual elements**.

5) Remanence mode - possibility of identifying some resources of the relay, which might be maintained when the supply voltage is off.

6) Fast bidirectional counter / frequency meter - measurement up to 20 kHz.

7) Edition of texts of alerts shown on the display, which include the variables of the relay.

8) Four keys of the keyboard to be used in LAD or STL languages.



management of a parking lot with limited number of places



The parking lot may operate in timing mode (from … to …) or in permanent mode.

The sensors at the entrance and exit help to define the number of cars in the parking lot and to compare the number with the preset number of places.

When the maximum number of vehicles are parked, the information "NO PLACES AVAILABLE" is lit at the entrance. Additionally, the entrance gate remains closed as long as a vehicle leaves the parking lot.

controller of two pumps - direct start-up



Alternate operation of pumps - automatic or manual.

Sequence control of the pumps - two levels of switching on, one level of switching off.

Automatic start-up of the second pump in case of a failure of the first one.

Protection against dry operation.

Outlets to the external alarm signaling (failure of the pump).

control of a machine for wire mesh production



Control of the squashing unit which bends the end parts of the wires of the mesh so to avoid injuries.

The design of the unit is based on two pneumatic servo-motors connected to the compressed air supply source.

The control system protects also against failures in course of production.

segregation of details in production process

Segregation of details on stroke feed according to their height.

Two height sensors of the appropriate range.

control of moving stairways

Control of the direction of movement (up and down).

Detection of passengers on the stairway on the basis of the signals from movement detectors.

control of lighting and drives of ventilators

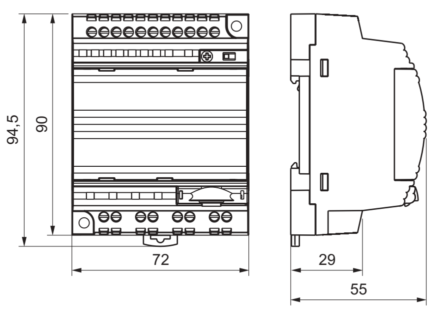
Voltage central switching on and off - manual or automatic switching according to timing schedule.

Possibility of flexible shaping of the function of lighting for each room.

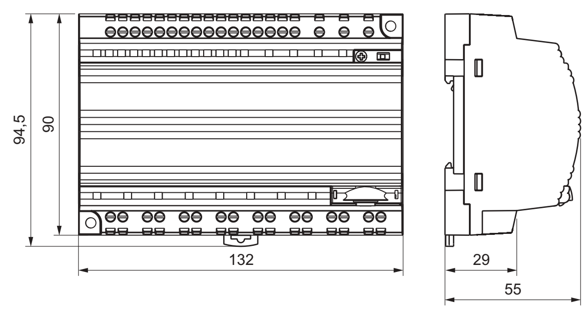
Technical data, dimensions

Programmable relays	NEED-230AC-22-...	NEED-24DC-22-...	NEED-12DC-22-...	NEED-220DC-22-...
Supply voltage				
Rated voltage	230 V AC 50/60 Hz ❶	24 V DC	12 V DC	220 V DC
Operating range of supply voltage	95...260 V AC	19,2...28,8 V DC	10,2...14,4 V DC	154...264 V DC
Rated power consumption	NEED-...-08-4R-D: < 5 VA NEED-...-16-8R-D: < 10 VA	NEED-...-08-4R-D: < 3 W NEED-...-16-8R-D: < 5 W	NEED-...-08-4R-D: < 3 W NEED-...-16-8R-D: < 5 W	NEED-...-08-4R-D: < 3 W NEED-...-16-8R-D: < 6 W
Inputs				
Number of digital inputs	NEED-...-08-4R-D: 6 (I1 - I6) NEED-...-16-8R-D: 13 (I1 - I13)			
Number of analog-digital inputs	NEED-...-08-4R-D: 2 (I7 - I8) NEED-...-16-8R-D: 3 (I14 - I16)			
Types of analog-digital inputs	AC voltage ones	DC voltage ones ❷	DC voltage ones ❷	DC voltage ones
Rated voltage • for logic state "1" • for logic state "0"	 85...260 V AC 50 Hz 0...32 V AC 50 Hz	 15...40 V DC -3...5 V DC	 8...26 V DC -1,5...4 V DC	 80...264 V DC 0...40 V DC
Range of analog input signals	0...255 V AC 50 Hz	0...12,75 / 0...25,5 V DC 0...25,5 / 0...51 mA	0...12,75 / 0...25,5 V DC 0...25,5 / 0...51 mA	0...255 V DC
Outputs				
Number and type of outputs	NEED-...-08-4R-D: 4 NO - unprotected relay outputs (Q1 - Q4) NEED-...-16-8R-D: 8 NO - unprotected relay outputs (Q1 - Q8)			
Min. switching voltage	10 V			
Rated load	AC1: 10 A / 250 V AC			
Min. switching current	10 mA			
Contact resistance	≤ 100 mΩ			
Insulation according to PN-EN 60664-1				
Insulation rated voltage	300 V AC			
Rated surge voltage	between the input and output circuit: 2 500 V 1,2 / 50 μs			
Overvoltage category	II			
Insulation pollution degree	2			
Dielectric strength • inputs - outputs • contact clearance	 2 000 V AC type of insulation: reinforced 1 000 V AC type of clearance: micro-disconnection			
General data				
Operating / release time	typical values: 7 ms / 3 ms			
Electrical life • resistive AC1 • L/R=40 ms	 > 0,7 x 10^5 10 A, 250 V AC > 10^5 0,15 A, 220 V DC			
Mechanical life (cycles)	> 3 x 10^7			
Dimensions (L x W x H)	NEED-...-08-4R-D: 90 x 72 x 55 mm NEED-...-16-8R-D: 90 x 132 x 55 mm			
Weight	NEED-...-08-4R-D: 210 g NEED-...-16-8R-D: 370 g			
Ambient temperature • storage • operating	 -40...+70 °C -20...+55 °C			
Cover protection category	IP 20 PN-EN 60529			
Standards, recognitions, certificates	PN-EN 61131-2, PN-EN 50178 CE			

❶ Tolerance 47...63 Hz.
❷ The relays NEED-...-16-8R-D (DC versions) offer the possibility to programmably configure the type of outputs as voltage/current ones.

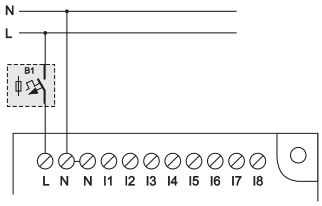


NEED-...-08-4R-D



NEED-...-16-8R-D

Supply connection

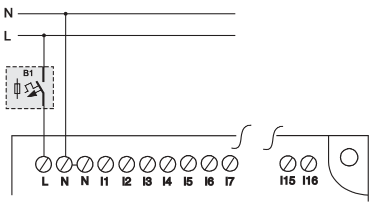


NEED-230AC-22-08-4R-D
230 V AC 50/60 Hz (95...260 V AC), L = 230 V AC, N = 0 V

NEED-24DC-22-08-4R-D
24 V DC (19,2...28,8 V DC), L = +24 V DC, N = 0 V

NEED-12DC-22-08-4R-D
12 V DC (10,2...14,4 V DC), L = +12 V DC, N = 0 V

NEED-220DC-22-08-4R-D
220 V DC (154...264 V DC), L = +220 V DC, N = 0 V



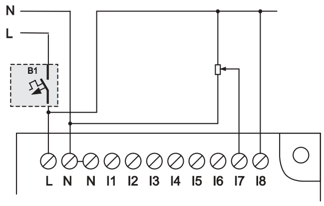
NEED-230AC-22-16-8R-D
230 V AC 50/60 Hz (95...260 V AC), L = 230 V AC, N = 0 V

NEED-24DC-22-16-8R-D
24 V DC (19,2...28,8 V DC), L = +24 V DC, N = 0 V

NEED-12DC-22-16-8R-D
12 V DC (10,2...14,4 V DC), L = +12 V DC, N = 0 V

NEED-220DC-22-16-8R-D
220 V DC (150...260 V DC), L = +220 V DC, N = 0 V

Analog-digital inputs

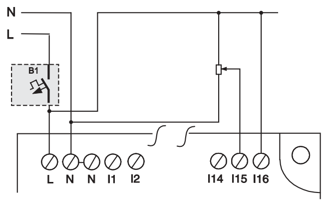


NEED-230AC-22-08-4R-D
0...255 V AC 50 Hz — **I7 - I8**: 0,9 mA

NEED-24DC-22-08-4R-D
0...12,75 / 0...25,5 V DC — **I7 - I8**: 2,0 mA

NEED-12DC-22-08-4R-D
0...12,75 / 0...25,5 V DC — **I7 - I8**: 1,1 mA

NEED-220DC-22-08-4R-D
0...255 V DC — **I7 - I8**: 1,1 mA



NEED-230AC-22-16-8R-D
0...255 V AC 50 Hz — **I14 - I16**: 1,5 mA

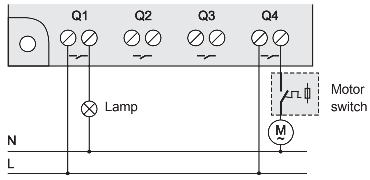
NEED-24DC-22-16-8R-D
0...12,75 / 0...25,5 V DC ① — **I14 - I16**: 2,0 mA
0...25,5 / 0...51 mA ② — **I14 - I16**: 2,0 mA

NEED-12DC-22-16-8R-D
0...12,75 / 0...25,5 V DC ① — **I14 - I16**: 1,1 mA
0...25,5 / 0...51 mA ② — **I14 - I16**: 1,1 mA

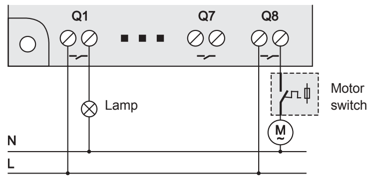
NEED-220DC-22-16-8R-D
0...255 V DC ① — **I14 - I16**: 1,1 mA

① Voltage ones
② Current ones

Digital outputs

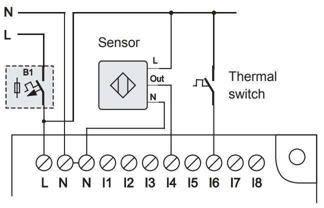


NEED-...-22-08-4R-D
relay outputs Q1 - Q4: 10 A, 250 V AC



NEED-...-22-16-8R-D
relay outputs Q1 - Q8: 10 A, 250 V AC

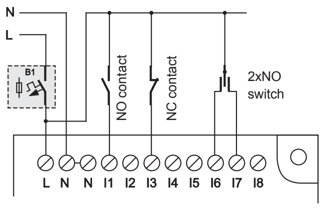
Digital inputs



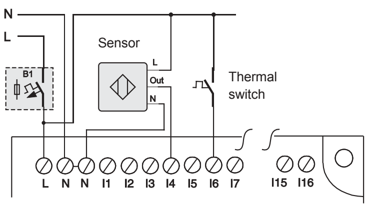
NEED-24DC-22-08-4R-D
L = +24 V DC, N = 0 V
Logic state „1": 15...40 V DC
Logic state „0": -3...5 V DC
I1 - I6: 3,3 mA, **I7 - I8**: 2,0 mA

NEED-12DC-22-08-4R-D
L = +12 V DC, N = 0 V
Logic state „1": 8...26 V DC
Logic state „0": -1,5...4 V DC
I1 - I6: 3,3 mA, **I7 - I8**: 1,1 mA

NEED-220DC-22-08-4R-D
L = +220 V DC, N = 0 V
Logic state „1": 80...264 V DC
Logic state „0": 0...40 V DC
I1 - I6: 0,6 mA, **I7 - I8**: 1,1 mA



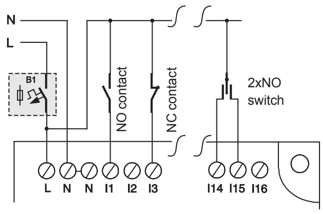
NEED-230AC-22-08-4R-D
L = 230 V AC, N = 0 V
Logic state „1": 85...260 V AC 50 Hz
Logic state „0": 0...32 V AC 50 Hz
I1 - I4: 0,6 mA
I5 - I6: 8,0 mA
I7 - I8: 0,9 mA



NEED-24DC-22-16-8R-D
L = +24 V DC, N = 0 V
Logic state „1": 15...40 V DC
Logic state „0": -3...5 V DC
I1 - I13: 3,3 mA, **I14 - I16**: 2,0 mA

NEED-12DC-22-16-8R-D
L = +12 V DC, N = 0 V
Logic state „1": 8...26 V DC
Logic state „0": -1,5...4 V DC
I1 - I13: 3,3 mA, **I14 - I16**: 1,1 mA

NEED-220DC-22-16-8R-D
L = +220 V DC, N = 0 V
Logic state „1": 80...264 V DC
Logic state „0": 0...40 V DC
I1 - I13: 0,6 mA, **I14 - I16**: 1,1 mA



NEED-230AC-22-16-8R-D
L = 230 V AC, N = 0 V
Logic state „1": 85...260 V AC 50 Hz
Logic state „0": 0...32 V AC 50 Hz
I1 - I11: 0,6 mA
I12 - I13: 8,0 mA
I14 - I16: 1,5 mA

Project part - financed by the EUROPEAN UNION
European Regional Development Fund

UNION FOR ENTERPRISING PEOPLE
COMPETITIVENESS PROGRAMME

company quoted at the WSE

The offer of Relpol S.A.
includes the following products:

- subminiature signal relays
  rated switching capacity: from 1 A to 3 A,
  coil voltage range: from 3 V to 48 V DC
- miniature relays
  rated switching capacity: from 5 A to 20 A
- industrial relays
  rated switching capacity: from 5 A to 30 A,
  mounting: to plug-in sockets on 35 mm rail mount acc. to PN-EN 60715 or on panel mounting, for PCB
- interface relays
  rated switching capacity: from 0,5 A to 16 A,
  number of contacts: from 1 to 4
- plug-in sockets for relays
  PCB plug-in sockets, plug-in sockets for 35 mm rail mount acc. to PN-EN 60715
- contactors
  rated switching power: from 2,2 kW to 200 kW /at 400 V/
- motor protection circiut breakers
  setting range: from 0,1 A to 63 A
- time relays
  single- and multifunction time relays,
  wide range of time adjustments
- monitoring relays
  monitoring of current, voltage, temperature, level
- NEED programmable relays
  versions: 8 inputs / 4 relay outputs,
  16 inputs / 8 relay outputs, programming: LAD, STL,
  supply voltages: 230 V AC, 12-24-220 V DC,
  LED indicators of the relay and input / output status
- RPS - DIN rail power supply
  for automation systems, output circuit: 12-24 V DC,
  rated currents: from 1,5 A to 20 A
- solid state relays
  rated load currents: from 1 A to 100 A,
  switching at zero or at any time
- overvoltage arresters
  classes I, II and III, available with changeover signal contact
- switches and rotary switches
  lever switches of 1-, 2-, 3- and 4-pole versions,
  rotary switches from 1 to 6 sections
  and from 2 to 12 positions
- digital protection sets for automation, measurements and control for mid-voltage fields
- production and installation of stationary devices for monitoring of radioactive radiation

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